

Motion: That CPRC recommend to Academic Council the approval of the new Minor in Sustainability Studies.

The University of Ontario Institute of Technology

Minor in Sustainability Studies

Proposal Brief

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Contents

1.0	Introduction.....	2
a.	Background.....	2
b.	Student Demand.....	3
c.	Societal Need.....	4
d.	Duplication	5
2.0	Degree Requirements	6
a.	Program Learning Outcomes.....	6
b.	Admission Requirements.....	7
c.	Program Structure	7
d.	Program Content	7
3.0	Resource Requirements	7
a.	Faculty Members.....	8
b.	Additional Academic and Non-academic Human Resources	8
c.	Physical Resource Requirements.....	8
4.0	Business Plan	8
a.	Statement of Funding Requirements	8
b.	Statements of Resource Availability.....	8

APPENDIX A: Minor in Sustainability Studies Course Inventory

APPENDIX B: New Course Templates

APPENDIX C: Suggested Program Maps

1.0 Introduction

a. Background

Rationale

Sustainability perspectives and practices are emerging as essential tools in the 21st century at local, national and global scales. The sustainability industry is highly multi-faceted in nature. Practitioners are rarely confined to one area of expertise – instead, they must draw upon a range of different disciplines to come up with solutions that address environmental, economic and social needs. Sustainability’s focus on interdisciplinary problem-solving is an exceptional opportunity that allows professionals to make a positive difference across many diverse areas. As such, students graduating in the next decade and beyond must be systems thinkers and complex problem solvers. Higher education is positioned to provide the critical thinking and skills training needed for effective leadership in this changing workplace and world.

The dominant themes of sustainability (ecology and environment, economics, social equity) are already pervasive within traditional undergraduate curricula, but are not typically ‘bundled’ to be recognized as such. To prepare graduates from all fields to create and work in a more sustainable world, the proposed interdisciplinary minor offers all students the opportunity to develop a solid mastery of the fundamental components of sustainability across multiple disciplines while using current UOIT course offerings and requiring no additional resources.

Alignment

This program fits into UOIT’s institutional mandate and it builds on work already in place at the University.

The Minor in Sustainability Studies addresses the following goals as per the UOIT Mission.

- ✓ Provide superior undergraduate and graduate programs that are technology-enriched and responsive to the needs of students and the evolving workplace.
- ✓ Conduct research that creates knowledge, solves problems, results in economic and social innovation and engages students.
- ✓ Facilitate life-long learning that is flexible, inclusive and emphasizes college university transfers.
- ✓ Develop academic and research collaborations with industry and community that stimulate and enhance the region and university at home and abroad.
- ✓ Cultivate a dynamic learning environment for students by promoting social engagement, fostering critical thinking and integrating experiences inside and outside the classroom.

The Minor in Sustainability Studies addresses the following outcomes as per the UOIT Strategic Plan.

Overarching Priority 1: Prepare our graduates for the evolving 21st-century workplace

Outcome 1.2 Students experience quality through integrated support for learning and discovery

- ✓ Create entrepreneurial and professional skills development programs to strengthen graduate attributes for the global workplace
- ✓ Build interdisciplinary teams that promote the adoption of innovative models for student learning and development
- ✓ Increase recruitment and retention by developing a cohesive plan that strengthens all aspects of the student experience
- ✓ Strengthen administrative partnerships across the university to facilitate a seamless student service experience

Abstract

The purpose of the Minor in Sustainability Studies is to provide foundational knowledge and skills related to the emerging discipline of sustainability and to prepare students to become innovators within their diverse fields. The minor seeks to educate students in the concepts and best practices in sustainability, and to teach them to consider all factors: economic, environmental and social, both in the short term and in the long term in making decisions. Intended as a complement to core fields of study, the minor draws from courses across all Faculties, and enhances and reflects each student's individual academic and career interests.

b. Student Demand

General Need and Student Demand

Students are getting serious about sustainability issues and have added their voices to an open letter delivered in December 2015 to head of the United Nations climate change conference. A global alliance of major higher education and student networks and associations developed the Open Letter, which urges ministers, negotiators and governments to support research, and education that will play a role in finding sustainability solutions.

A segment of the open letter is below, the full letter and list of all organizations involved can be found here: <http://cop21.grli.org/>

"...We commit to supporting our members in creating more innovative academic pathways for our students - the leaders and policy makers of the future - and to supporting our staff to envision and spur creative strategies, practices and attitudes for climate change solutions. We call on national Governments to support us to embed climate and sustainable development education into teaching, operations, and quality standards.

We celebrate the unique role of our university and college members in leading the research and understanding of the origins and trajectory of climate change, in gauging its consequences, and designing reduction mitigation and adaptation solutions. We invite COP21 to acknowledge and

strengthen the key research and development role that our university and college members contribute towards climate change solutions.

We believe that our university and college members are pioneers and demonstrators in modelling and piloting effective climate and sustainable development practices.

We call on COP21 Ministers to strengthen, showcase and embed our responsibility to assess and report on our climate and wider sustainability organizational and teaching performance.

More specifically, we urge COP21 Ministers and Governments to consider taking the following measures:

“Invite, challenge, support and highlight universities and colleges as living laboratories and agents of change for climate change adaptation and mitigation, so that they, in turn, may inspire and stimulate actions in their local communities and societies. Showcase education initiatives that take an integrated and collaborative approach to the design and delivery of programmes and which place the Global Goals for Sustainable Development at the centre of teaching, learning and research...”

Projected Enrollment

When comparing with other post-secondary institutions that have developed a similar program, we can conservatively expect 5-10 enrolled students within year one and rising to 20-25 students in year two and steadying between 20-30 students in the years to follow.

c. Societal Need

Over the next 50 years, the most critical challenges faced by society will be the rapidly growing ecological and social crises. Dealing with these interdisciplinary problems requires interdisciplinary solutions developed by professionals that are adaptable systems-thinkers and understand complex relationships. Below are examples on local and global scales of how there is increasing demand for sustainability professionals to address societal and sustainable development needs.

A study done by ECO Canada in 2014 found:

- Over 50,000 Canadian practitioners spend 50% or more of their time working on activities related to economic, social and environmental sustainability.
- Over the past two years, most job vacancies were for sustainability specialist positions, this accounts for 70% of Canada’s sustainability workforce.
- In the next 3 to 5 years, majority of sustainability consulting firms expect to hire. This will result in around 400 new positions.
- An additional 3,800 new jobs will be created as 46% other sustainability employers increase their staff.

- The greatest employer of sustainability professionals are governments. Other employers of sustainability professionals include research institutions, not-for-profit, larger companies in manufacturing, and businesses in retail.
- Sustainability is an interdisciplinary field many of the people hired hold degrees in physical or life sciences, engineering, social science, or natural resources and conservation.
- Ontario and Quebec have the highest share of organizations with sustainability staff.
- Majority of sustainability consultants are under the age of 35.

The 2016-2019 Federal Sustainable Development Strategy (FSDS):

- The 2016-2019 FSDS was tabled in Parliament in October of 2016. It is in response to public feedback and presents 13 aspirational goals.
- These goals include action on climate change, low-carbon government, clean growth, modern infrastructure, clean energy, healthy coasts and oceans, pristine lakes and rivers, sustainably managed forests, healthy wide life populations, clean drinking water, sustainable food, connecting Canadians with nature and safe communities.
- These goals are a Canadian reflection of the environmentally-related sustainable development goals of the 2030 Agenda for Sustainable Development. It also includes targets and indicators, new short-term milestones, and clear action plans.

The 2014 UNESCO Roadmap for Implementing the Global Action Program recognized Education for Sustainable Development as an integral element of quality education and a key enabler for sustainable development.

UNESCO Global Action Programme on Education for Sustainable Development Objectives:

Objective 1 “to reorient education and learning so that everyone has the opportunity to acquire the knowledge, skills, values and attitudes that empower them to contribute to sustainable development”

Objective 2 “to strengthen education and learning in all agendas, programmes and activities that promote sustainable development

d. Duplication

Reflecting its rising importance in many organizational settings, including the business world, sustainability is fast becoming a popular minor and/or concentration at institutions of higher education. The Association for Sustainability in Higher Education (AASHE) database contains 1378 sustainability-focused academic programs at 456 campuses in 63 states and provinces with 146 different sustainability-related minors listed.

Currently in Ontario, Sustainability Minors are offered at McMaster University, the University of Toronto, and OCAD University.

McMaster University’s Interdisciplinary Minor in Sustainability is the program that has been modeled for this proposal. The program is housed within the Faculty of Arts & Science and offers a wide variety of courses which allows students to choose the sustainability emphasis. They have reported that through the development and implementation of the Interdisciplinary Minor in Sustainability, students are now able to choose from over 64

courses from Faculties across campus and in only two years of operation, 19 students declared an Interdisciplinary Minor in Sustainability. To complete this program, students must complete 8 courses (24 units): 1 core and 7 electives.

At OCAD, the Sustainability Minor is offered through the Faculty of Liberal Arts & Sciences and School of Interdisciplinary Studies. Students who complete the Sustainability Minor will understand the scientific and ethical principles underpinning the contemporary issues of sustainability. Students will acquire knowledge of the methodologies of science and the humanities and how they intersect on sustainability issues. They will apply the knowledge they gain from the core and elective courses in the minor to their own creative practices. The minor allows flexibility for students to bring the theoretical understanding and skills into their own studio. Students will also engage with multiple specializations and learn critical communication skills within interdisciplinary groups. These skills will position students to greatly influence the discourse of sustainability within the creative economy and society as a whole. Students from any faculty and program are able to declare this minor. To complete the course, students require a total of 6 courses (3 credits): 2 core and 4 electives.

The University of Toronto Sustainable Energy Minor aims to teach students about energy, its sustainable use, energy demand management, and the public policy context in which energy use and production is regulated. The University of Toronto Minor in Sustainable Energy offers 44 courses and is *only available to all engineering undergraduates*.

2.0 Degree Requirements

a. Program Learning Outcomes

All students completing the requirements for a Minor in Sustainability Studies will be able to:

1. Be able to define sustainability and understand how concepts of sustainability are connected to issues of human welfare and equity, the environment, and the economy;
2. Adapt and apply knowledge, theories, and methods learned to analyze sustainability issues and/or practices;
3. Be able to explain how sustainability relates to their lives and their values, and how their actions impact issues of sustainability at the individual, local, regional and global levels;
4. Understand basic principles of systems thinking and recognize interrelated systems;
5. Develop an understanding of sustainability as a conceptual lens for critical analysis;
6. Evaluate current and potential future impacts of sustainability issues including: Global climate and climate change; Food; Energy; Water; Environmental Degradation; and Social Justice.

b. Admission Requirements

A minor in Sustainability Studies is available to all students in any major program at UOIT. A cumulative GPA of at least 2.0 in minor courses is required to successfully complete this minor.

c. Program Structure

Requirement: 7 courses (21 credit hours); 3 mandatory courses and 4 elective courses chosen from the Sustainability Studies Course Inventory (Refer to Appendix A)

New mandatory course: Policies in Sustainability (POSC 3303U) in the Faculty of Social Science and Humanities (Refer to Appendix B)

New prerequisites for POSC 3300U- Building Sustainable Communities (approved by FSSH in Nov 2017): *'One of POSC 2100U or POSC 2502U or POSC 2000 or ENVS 1000'*

Refer to Appendix C for suggested program maps created for students in the Faculty of Social Sciences and Humanities, Faculty of Science, Faculty of Health Sciences and Faculty of Energy Systems and Nuclear Science.

A maximum of two courses (6 credit hours) can overlap with the student's major.

d. Program Content

All applicable courses, both mandatory and elective courses, are selected from the Sustainability Studies Course Inventory (Appendix A). As an interdisciplinary minor, students must complete the three core courses and four elective courses.

The new course template for the proposed mandatory course, Policies in Sustainability (POSC 3303U), and elective course, Environmental Communication (COMM 3350U, approved in November 2017) is attached in Appendix B.

Notes:

- No more than six credit hours (two courses) can be double counted with the student's major or minor program.
- It is the student's responsibility to check carefully for prerequisites, co-requisites and enrollment restrictions.
- Students should note that not all courses listed are available each year and all courses have enrollment capacities.
- Students are strongly encouraged to seek guidance from their Faculty Advisor or the Faculty of Social Sciences and Humanities to ensure they are meeting all enrollment requirements.

3.0 Resource Requirements

a. Faculty Members

The minor program will be housed in the Faculty of Social Sciences and Humanities. All but two courses in the Course Inventory are currently offered at UOIT. The proposed mandatory and elective courses, Policies in Sustainability and Environmental Communication respectively will be taught by existing members of UOIT, with the potential for the future hiring of a sessional lecturer with specialized industry expertise.

b. Additional Academic and Non-academic Human Resources

The Program Committee would be responsible for:

- Promotion of the Minor
- Advise on the administrative processes involved, such as course exception process, course list, requirements, etc.
- Consult with Faculty colleagues on the course list and other administrative aspects
- Approve and update the course list, specifically for courses under each member's home Faculty. Offer insight on courses outside home Faculty.
- Provide pan-campus perspective as it relates to development and management of the Minor

Meeting Frequency: Annually in person, and semesterly online communication

Members of Committee: Staff from the Office of Campus Infrastructure & Sustainability along with at least one member from each faculty (can include the Dean, Chair, Program Advisors, Program Coordinators, or Faculty member)

c. Physical Resource Requirements

A classroom/lecture room would be required for the two new course offerings; no laboratories or special equipment are required at this time.

4.0 Business Plan

a. Statement of Funding Requirements

With the addition of Environmental Communication (COMM 3350U) and Policies in Sustainability (POSC 3303U), no new faculty members would be required; however there is potential for future hiring of a sessional lecturer with specialized industry expertise (one sessional lecturer per academic year for POSC 3303U).

Based on a conservative estimate, enrollment within year one of the minor is expected to be 5-10 students and rising to 20-25 students in year two and steadying between 20-30 students in the years to follow.

b. Statements of Resource Availability

Peter Stoett, Dean of Social Sciences and Humanities

The Minor in Sustainability Studies will be a great addition to the UOIT curriculum, allowing graduating students the opportunity to gain fundamental knowledge and skills in sustainability to complement their major field of study. This program will use existing course offerings in the UOIT calendar and adds only two new courses. No new faculty are required at this time, however resources will be allocated in the future for the potential hire of a new sessional lecturer with specialized expertise in the sustainability field (estimating one sessional lecturer per academic year).

During the creation of this proposal, all UOIT Deans were consulted, input was gathered and relevant changes were made. Greg Crawford, Dean of Faculty of Science, in support of the Minor in Sustainability Studies is allowing ENVS 1000U to be a mandatory course for this program.

APPROVAL DATES

Curriculum Committee approval	<i>12 December 2017</i>
Faculty Council approval	<i>18 December 2017</i>
CPRC	<i>19 January 2018</i>
Academic Council	

APPENDIX A

Minor in Sustainability Studies Course Inventory

Minor in Sustainability Studies Course Inventory

Specific courses are required for this minor program. A list of courses follows*.

Three mandatory courses:

ENVS 1000U – Environmental Science

POSC 3300U – Building Sustainable Communities

POSC 3303U – Policies for Sustainability

Additional courses selected from the following

- **Four of:**

- AEDT 4150U – Holistic Learning in Early Childhood
- BIOL 1020U – Biology II: Diversity of Life and Principles of Ecology
- BIOL 1841U – Essentials of Biology
- BIOL 3620U – Conservation Biology
- BIOL 3660U - Ecology
- BIOL 4080U – Bioethics
- BUSI 1600U – Management of the Enterprise
- BUSI 1700U – Introduction to Entrepreneurship
- BUSI 2000U – Collaborative Leadership
- BUSI 2050U – Managerial Economics
- BUSI 2620U – Business Ethics
- BUSI 3330U – Management of Change
- CHEM 3050U – Environmental Chemistry
- COMM 3310U – Communication, Communities and Social Change
- COMM 3350U – Environmental Communication
- COMM 3710U – Intercultural Communication
- EDUC 3201U – Environmental Education
- ENGR 3420U – Energy and Environmental Impact
- ENGR 3730U – Solar Energy Technologies
- ENGR 3830U – Wind Energy Systems
- ENGR 4480U – Emerging Energy Systems
- ENVS 2010U – Introductory Environment Science
- ENVS 3110U – Economics and Politics of The Environment
- HLSC 1811U – Social Determinants of Health
- HLSC 3823U – Health and Indigenous People in Canada
- HLSC 3710U – Ethics
- HLSC 4803U – Global Health
- HLSC 4809U – Environmental and Occupational Health
- HLSC 4823U – Small Business Practice and Entrepreneurship for Health Professionals
- INDG 2000U – Introduction to Indigenous Studies
- LGLS 2120U – International Law
- LGLS 3230U – Law & Globalization
- LGLS 3310U – Indigenous Peoples, Law and the State in Canada
- LGLS 4040U – Law and the Environment

- MANE 4380U – Life Cycle Engineering
- MECE 3260U – Introduction to Energy Systems
- MECE 4430U – Sustainable and Alternative Energy Technologies
- PHY 4040U – Solar Energy and Photovoltaics
- PHY 4050U – Emerging Energy Systems
- POSC 2300U - Mobilizing for Change
- POSC 3100U – Political Economy of Global Development
- POSC 3201U – Rural Communities
- POSC 3203U – Urban Development
- POSC 3301U – Eco-Justice
- POSC 3302U – Environment and Globalization
- POSC 3500U – Equity Policy
- SSCI 1470U – Impact of Science and Technology on Society
- SSCI 2020U – Issues of Diversity

*Notes:

- No more than six credit hours (two courses) can be double counted with the student's major or minor program.
- It is the student's responsibility to check carefully for prerequisites, co-requisites and enrollment restrictions.
- Students should note that not all courses listed are available each year and all courses have enrollment capacities.
- Students are strongly encouraged to seek guidance from their Faculty Advisor or the Faculty of Social Sciences and Humanities to ensure they are meeting all enrollment requirements.

APPENDIX B

New Course Templates

TEMPLATE 8-A

NEW COURSE TEMPLATE

For changes to existing courses see Course Change Template

Faculty: Social Science and Humanities			
Full Course Title: Policies for Sustainability			
Short Form Course Title (max 30 characters): Policies for Sustainability			
Subject Code and Course number: POSC 3303U	Cross-listings:	<input checked="" type="checkbox"/> Core <input checked="" type="checkbox"/> Elective	Credit weight: 3
Contact hours (please indicate number of hours for each component):			
<input checked="" type="checkbox"/> Lecture: 3 <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Other			

PROGRAM(S) IMPACTED [For a core course, please list all impacted programs including any applicable fields or specializations here and include this form with a program adjustment/proposal; for an elective course being inserted anywhere other than the Course Description section of the Academic Calendar, please list all impacted programs including any applicable fields or specializations and place the Calendar copy for each here (e.g. in a list of electives tied to a specific program).]

This course will be a mandatory (core) course for students in the proposed Minor in Sustainability Studies and is currently not on any other major program map; it will also be an open elective course for any students, in any program that satisfy the two prerequisites.

CALENDAR DESCRIPTION

Students will apply their knowledge and skills to solve practical problems that will help to develop policies for a more sustainable global society. Students will participate in small and large group activities, using case studies, to develop problem-solving skills and the ability to analyze complex challenges to various aspects of sustainability (social, economic and environmental). Students will work individually and in teams to research and analyze a chosen problem to produce a workable solution and policy. Students will be expected to present their findings in oral and written formats.

Prerequisites	ENVS 1000U; third year standing
Co-requisites	
Credit restrictions	
Credit exemptions	
Grading scheme	<input checked="" type="checkbox"/> letter grade <input type="checkbox"/> pass/fail

LEARNING OUTCOMES (this section is required)

Students will learn how to apply their individually honed skill sets to sustainable policy development
 Public speaking and presentation skills will be enhanced
 Teamwork skills will be developed through intense group assignments

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COURSE INSTRUCTIONAL METHOD

(check all that <u>may</u> apply)	<input checked="" type="checkbox"/> CLS (in-class)	<input checked="" type="checkbox"/> HYB (in-class and online)
	<input type="checkbox"/> IND (individual studies)	<input type="checkbox"/> OFF (off-site)
	<input type="checkbox"/> WB1 (synchronous online delivery)	
	<input checked="" type="checkbox"/> WEB (asynchronous online delivery)	

TEACHING AND ASSESSMENT METHODS

Teaching methods may include small and large group projects, case study analysis, written assignments, presentations and examinations and/or other assessment methods.
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CONSULTATION AND FINANCIAL IMPLICATIONS, WHERE APPROPRIATE

This is a mandatory course for the Minor in Sustainability Studies. Consultation and implications as noted in the program proposal.

EFFECTIVE SEMESTER (Specify Term e.g. Fall 2017)

Fall 2018

APPROVAL DATES

Curriculum Committee approval	<i>12 December 2017</i>
Faculty Council approval	<i>18 December 2017</i>
Submission to CPRC/GSC	<i>16 Feb 2018</i>

NB – this course was presented to CPRC in November 2017 and is included here for reference only. **TEMPLATE 8-A**

NEW COURSE TEMPLATE

For changes to existing courses see Course Change Template

Faculty: Social Science and Humanities			
Full Course Title: Environmental Communication			
Short Form Course Title (max 30 characters):			
Subject Code and Course number: COMM 3350	Cross-listings: N/A	X Elective	Credit weight: 3
Contact hours (please indicate number of hours for each component): X Lecture: 3 hours			

PROGRAM(S) (if applicable, form should accompany a program adjustment/proposal)

Communication and Digital Media Studies

CALENDAR DESCRIPTION

This course explores the communication of the environment by a plurality interest groups in society: government, companies, the news media, PR and advertising firms, polls, entertainment industries, and social media organizations. Students learn about environmental journalism, environmental public relations, fictional and promotional depictions of the environment, environmental advocacy campaigns, risk communication and public opinion about environmental issues. Mediated stories about and images of climate change, resource extraction, energy consumption, ecological crisis, sustainability and adaptation, wildlife, water, food, and green technologies are explored with regard to normative theories of environmental communication for a socially just and sustainable planet.

Prerequisites	None
Co-requisites	None
Credit restrictions	None
Credit exemptions	None
Grading scheme	

LEARNING OUTCOMES (this section is required)

- On completion of this course, students will demonstrate:
1. Knowledge about the environmental communication research field.
 2. Knowledge about key and current topics and issues in environmental communication.
 3. Awareness of and ability to define and apply key concepts in environmental communication.
 4. Awareness of and ability to utilize qualitative methods for analyzing mediated stories and images of the environment.

5. Oral and written communication skills by writing assignments, preparing and asking live questions and participating in group discussions about the communication of the environment by various media forms and texts.
6. Application of knowledge about environmental communication in assignments.
7. Professional autonomy by exercising critical thinking about environmental communication, making ethical value-judgements about the quality and social and cultural impacts of environmental communication, expressing opposing points of view on relevant environmental topics and issues, and being self-reflexive.
8. Awareness of limits of knowledge about environmental communication and related topics and issues through reflexive questioning of the claims made by the professor, the authors of assigned articles, and peers.

COURSE INSTRUCTIONAL METHOD

(check all that <u>may</u> apply)	<input checked="" type="checkbox"/> CLS (in-class)	<input checked="" type="checkbox"/> HYB (in-class and online)
	<input type="checkbox"/> WB1 (synchronous online delivery)	
	<input type="checkbox"/> WEB (asynchronous online delivery)	

TEACHING AND ASSESSMENT METHODS

Written assignments, tests and other assessment methods.

CONSULTATION AND FINANCIAL IMPLICATIONS, WHERE APPROPRIATE

The course is unique and does not duplicate courses currently offered by any other FSSH or UOIT program. Environmental Communication is an important and growing area of research and practice, and no UOIT faculties or programs offer courses addressing this burgeoning topic. As an open elective offered by CDMS, the Environmental Communication course will increase CDMS elective offerings and support both the Sustainability Studies Minor and the Liberal Studies programs. The course can be instructed by a core CDMS faculty member or a sessional instructor with expertise in the field.

EFFECTIVE SEMESTER (Specify Term e.g. Fall 2017)

Fall 2018

APPROVAL DATES

Curriculum Committee approval	October 17, 2017
Faculty Council approval	October 24, 2017
Submission/Approval to CPRC	November 17, 2017

APPENDIX C

Minor in Sustainability Studies Suggested Program Maps

Suggested Program Map for Social Science and Humanities Students

Mandatory Courses:

1. ENVS 1000U – Environmental Science
2. POSC 3300U - Building Sustainable Communities
3. POSC 3303U – Policies in Sustainability

FOUR additional courses selected from the following*:

- AEDT 4150U – Holistic Learning in Early Childhood
- BUSI 1600U – Management of the Enterprise
- BUSI 1700U – Introduction to Entrepreneurship
- BUSI 2000U – Collaborative Leadership
- BUSI 2620U – Business Ethics
- BUSI 3330U – Management of Change
- COMM 3310U – Communication, Communities and Social Change
- COMM 3350U – Environmental Communication
- COMM 3710U – Intercultural Communication
- EDUC 3201U – Environmental Education
- INDG 2000U – Introduction to Indigenous Studies
- LGLS 2120U – International Law
- LGLS 3310U – Indigenous Peoples, Law & the State in Canada
- LGLS 3230U – Law & Globalization
- LGLS 4040U – Law and the Environment
- POSC 2300U – Mobilizing for Change
- POSC 3100U – Political Economy of Global Development
-
- POSC 3201U - Rural Communities
- POSC 3203U – Urban Development
- POSC 3301U – Eco-Justice
- POSC 3302U – Environment and Globalization
- POSC 3500U – Equity Policy
- SSCI 1470U – Impact of Science and Technology on Society
- SSCI 2020U – Issues in Diversity

Suggested Program Map for Faculty of Science Students

Minor requirements

Specific courses are required for this minor program. A list of courses follows.

Three mandatory courses:

- ENVS 1000U – Environmental Science
- POSC 3300U – Building Sustainable Communities
- POSC 3303U – Policies in Sustainability

Additional courses selected from the following list.

Note: This is not an exhaustive list of all approved “Sustainability Studies” courses which can be applied towards the minor. Faculty of Science students can apply other approved courses towards their minor, but should be aware of prerequisite and enrollment restrictions.

- **Four of:**
 - BIOL 1020U – Biology II: Diversity of Life and Principles of Ecology
 - BIOL 3620U – Conservation Biology
 - BIOL 4080U – Bioethics
 - BUSI 1600U – Management of the Enterprise
 - BUSI 1700U – Introduction to Entrepreneurship
 - BUSI 2000U – Collaborative Leadership
 - CHEM 3050U – Environmental Chemistry
 - COMM 3350U – Environmental Communication
 - EDUC 3201U – Environmental Education
 - ENVS 2010U – Introductory Environmental Science
 - ENVS 3020U – Introductory Energy Science
 - ENVS 3110U – Economics and Politics of The Environment
 - POSC 3301U – Eco-Justice
 - POSC 3302U – Environment and Globalization
 - PHY 4040U – Solar Energy and Photovoltaics
 - PHY 4050U – Emerging Energy Systems
 - SSCI 1470U – Impact of Science and Technology on Society

Suggested Map for the Health Science Program

Three Mandatory Courses:

1. ENVS 1000U – Environmental Science
2. POSC 3300U – Building Sustainable Communities
3. POSC 3303U – Policies in Sustainability

TWO additional courses selected from the following*:

- BUSI 1600U – Management of the Enterprise
- BUSI 2000U – Collaborative Leadership
- BUSI 3330U – The Management of Change
- COMM 3350U – Environmental Communication
- COMM 3710U – Intercultural Communication
- ENVS 2010U – Introductory Environment Science
- ENVS 3110U – Economics and Politics of The Environment
- EDU 3201U – Environmental Education
- HLSC 3710U – Ethics
- HLSC 4803U – Global Health
- HLSC 4809U – Environmental and Occupational Health
- HLSC 4823U – Small Business Practice and Entrepreneurship for Health Professionals
- SSCI 1470U – Impact of Science and Technology on Society
- SSCI 2020U – Issues of Diversity

*Health Science students will count BIOL 1020- Biology II: Diversity of Life and Principles of Ecology and HLSC 1811U – Social Determinants of Health as their two overlapping courses, to complete the required seven course requirement for the Minor in Sustainability Studies.

Minor in Sustainability Studies for Energy Systems and Nuclear Science

Mandatory Courses:

1. ENVS 1000U – Environmental Science
2. POSC 3300U Building Sustainable Communities
3. POSC 3303U – Policies in Sustainability

FOUR additional courses selected from the following:

- AEDT 4150U – Holistic Learning in Early Childhood
- BIOL 1020U – Biology II: Diversity of Life and Principles of Ecology
- BIOL 4080U – Bioethics
- BUSI 1600U – Management of the Enterprise
- BUSI 1700U – Introduction to Entrepreneurship
- BUSI 2000U – Collaborative Leadership
- BUSI 2050U – Managerial Economics
- BUSI 2620U – Business Ethics
- BUSI 3330U – Management of Change
- COMM 3310U – Communication, Communities and Social Change
- COMM 3350U – Environmental Communication
- COMM 3710U – Intercultural Communication
- EDUC 3201U – Environmental Education
- ENGR 3420U – Energy and Environmental Impact

- ENGR 3730U – Solar Energy Technologies
- ENGR 3830U – Wind Energy Systems
- ENGR 4480U – Emerging Energy Systems
- ENVS 2010U – Introductory Environment Science
- ENVS 3110U – Economics and Politics of The Environment
- HLSC 1811U – Social Determinants of Health
- MANE 4380U – Life Cycle Engineering
- MECE 3260U – Introduction to Energy Systems
- MECE 4430U – Sustainable and Alternative Energy Technologies
- PHY 4040U – Solar Energy and Photovoltaics
- PHY 4050U – Emerging Energy Systems
- POSC 3301U – Eco-Justice
- POSC 3302U – Environment and Globalization
- SSCI 1470U – Impact of Science and Technology on Society

Notes:

- No more than six credit hours (two courses) can be double counted with the student's major or minor program.
- It is the student's responsibility to check carefully for prerequisites, co-requisites and enrollment restrictions.
- Students should note that not all courses listed are available each year and all courses have enrollment capacities.
- Students are strongly encouraged to seek guidance from their Faculty Advisor or the Faculty of Social Sciences and Humanities to ensure they are meeting all enrollment requirements.